

philosopher said they should study that which they will most need when they become men. Wm. Penn, in writing to his wife, in relation to the education of his children, said, "Give them learning, but let it be useful learning." The people are generally convinced, now, that the classics have occupied an unreasonably large part of the time of many, and that studies having a closer connection with the intended pursuits of our youth will be more useful. The opposing current has fully set in. Care should be taken that we do not go to the opposite extreme, seeking only the immediately practical. Universities do not exist merely for the purpose of training men for their special crafts or trades. To ridicule any ulterior end is irrational. "The man is more than the trade." Practical, skillful men in the trades and arts we need. To have them we must educate them. They will not grow of themselves. God will not work a wonder to help us when he has given us wherewith to help ourselves. Especially are such men demanded in our state, where there are so many persons engaged in agricultural, mechanical, engineering and mining pursuits. To advocate such an education is to advocate the highest interests of our Commonwealth and its toilers.

The opinions of men as to the comparative value of studies, have varied greatly at different periods. Archimedes regarded it as degrading to science to be useful, to contribute to the wants and happiness of man. According to Seneca to impute to man any share in the invention or improvement of a plough, a ship, or a mill, was an insult. It is in accordance with that spirit that practical studies, those which relate to the daily employments of life, are now stigmatized as "bread and butter sciences." In the middle ages alchemy, astrology, and dialectics were the cardinal studies. In the latter part of this period, Gerard Groot, a mighty preacher in the mother tongue, said, "Spend no time on geometry, arithmetic, rhetoric, dialectics, grammar, poetry, horoscopes, or astrology. Such pursuits are denounced by Seneca, much more by Christians of a spiritual mind. They avail not for the spiritual life." About the same time Hegius said, "If any one wishes to understand grammar, rhetoric, mathematics, history or the Holy Scriptures, let him study Greek. We owe everything to the Greeks." At a later period, Latin was recommended for all. Being the repository of the learning of the world, it is not strange that a knowledge of it should have been required of all students. In 1854, President Francis Wayland, one of the best educators and noblest men our country has ever had, having eight years before expressed his dissatisfaction with the then existing course of study, in an address at Union College, said :

"It would seem that our whole system of instruction needs an honest, thorough and candid revision. It has been for centuries the child of precedent. If those before us made it what it is, by applying to it the resources of earnest and fearless thought, I can see no reason why we, by precisely the same course, might not improve it. God intended us for progress, and we counteract his designs when we deify antiquity and bow down and worship an opinion, not because it is either wise or true but simply because it is ancient."

Soon after this, Prof. Chase, of Brown University, gave eight lectures to 353 jewelers and other workers in metals, on "The Chemistry of the Precious Metals." These lectures gave great satisfaction and profit, and remarks were made by the workmen showing how much they felt they had lost by not having received such instruction before.

In 1858, that invaluable article "What knowledge is of the most worth?" gave a fresh impulse to the new departure. To answer the question of Herbert Spencer

wisely, and to give to all the students in our schools, colleges and universities, the knowledge of most worth to them, should be the object of all educators. So multiplied have the sciences become, and so increased the range of studies, that we cannot compel the student to follow a routine suited to past centuries. The two different opinions as to the object of education still prevail; Froude says it is to prepare the student to 't' in his food and clothing; Matthew Arnold says: "To know is sublime; to do, base." To recognize the change that has taken place, and adapt ourselves to it, is the part of wisdom. We cannot sympathize with the distinguished Greek scholar, who, on his death-bed, lamented that he had not spent the last twenty years of his life on the dative case.

The old and rich institutions of England are slow to adapt themselves to the changes in learning. In Cambridge, it is said, a man may yet get the highest honors in mathematics and natural philosophy, and have never seen a crystal, a lens, an air-pump, or a thermometer; and at Oxford he may get his first honor in natural science without knowing the binomial theorem or the solution of a triangle. Yet in technical education we are far behind England and the continent, where are numerous richly endowed institutions fitted to give instruction in practical education. They have consequently acquired great superiority over us in many of the arts and manufactures. We have been too well satisfied with ourselves and our school system, and have not educated our youth in the arts so as to develop without "trial and error," and without the most lavish waste, our abundant natural resources. Our wealth has reached the sum of \$30,000,000,000. But we forget that we are in most cases exhausting our virgin soil without seeking to restore it; that we are consuming our vast stores of mineral wealth and recklessly destroying our forests. In the year 1870 this transfer of wealth from the surface and from beneath the surface, after deducting the cost of labor and material, was \$1,183,410,861, or one twenty-fifth of all our computed wealth. We took our riches from the earth, and, aided by foreign capital to the amount of \$1,400,000,000—our supposed entire foreign indebtedness—we erected our edifices, built our ships and railroads, and fancied ourselves more wealthy by this entire amount. We forgot that the change of a dollar from the purse to the hand, where it could be seen and counted, is not an increase of one dollar in our wealth. It was a dollar, and is a dollar still. We forgot that it is labor which creates wealth or enhances values, and, so far as labor was employed in developing our resources, to that amount, and to that amount only, it has added to our wealth. Of this vast natural wealth we must not be too prodigal. We have, it is true, one of the richest countries on the earth; a fertile soil, extensive forests, and an abundance of oil, coal, iron, salt, gold, silver, lead, copper, nickel, slate and marble. Much of our soil has already been exhausted through bad agriculture. We are less careful in this than the Chinese, who see that every element taken from the soil is returned to it, so that there shall be no waste. Our woodlands have been so recklessly stripped, noble forests often girdled and left to stand for years to decay, monuments of our wastefulness, that the cry, "Forebear!" is coming up from all parts of our land. Our iron and coal, too, have been used without regard to economy. What we want is to use all our abundant material so economically as to have no waste, and to apply to it so much of skilled labor as will add the most possible to its value. The labor, too, should be applied in this and not in foreign countries. To send our cotton to England and bring it back, paying for it many times what we receive, or to send over our wheat to be